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bush and grows at the very edge of the cliffs, hanging down over them so as to make it almost dangerous to collect it. Near Madison it was found growing all over one hill-side, its large violet-purple heads making it an object of much beauty. Its leaves are so rigid that they soon dry and become very brittle and hence in collecting specimens in flower all the lower leaves are apt to drop off and leave only the leafless stock.—J. M. C.

RECENT PERIODICALS.—*American Journal of Science and Arts*, October. The only botanical note is an extract from the *Buffalo Courier* on "Sensitive Stigmas as an aid to cross fertilization of Flowers," by Prof. W. J. Beal, read at the recent meeting of the American Association held at Buffalo. Observations were especially made upon *Martynia proboscidea*. It seems that the humble bee or common hive bee aids in the cross fertilization of this plant. When the bee, loaded with pollen, alights on the spotted, showy part of the corolla, it crawls in, first hitting the stigmas. "These are sensitive to the touch and close up in five to ten seconds, often before the insect is ready to back out of the flower. If they are not quite closed at that time, the bee shuts them by pushing her back against the back of one of the stigmas. The lower lobe of the flat stigma next to the bee's back is the larger. No pollen can be left as the insect retreats and a cross of pollen is usually certain. If not freely dusted with pollen the stigmas open again in about fifteen minutes." The *Iris* is mentioned as acting in a similar way. The stigmas of *Mimulus ringens* are also sensitive and dusted with pollen by small Hymenoptera. The stigmas of *Mimulus luteus* and *M. moschatus* close quickly upon being touched. *Tecoma radicans*, *T. grandiflora* and *Utricularia vulgaris* are all like *Martynia* in the peculiarities mentioned.

American Naturalist, October.—"Carnivorous Plants," by Prof. W. J. Beal, is rather an enumeration of those species and genera of plants which catch insects by various contrivances. Commencing with the discovery by Mr. Ellis, in 1768, of the powers of the Venus fly-trap, we are led down through *Drosera*, *Sarracenia*, *Nepenthe*, *Pinguicula*, *Utricularia*, *Solanaceae*, and *Silene*, to *Martynia proboscidea* which the author thinks is a true insectivorous plant. This plant, with its curious cross fertilization and insectivorous propensities, may prove to be an exceedingly interesting one. As *Martynia* is within reach of almost every reader of the GAZETTE, I have thought it would not be unprofitable to quote some of the observations made upon it by Prof. Beal, and they can be very easily verified by almost any botanist:

"I have lately given some attention to the *Martynia* on account of the great number of small insects which it catches by glandular hairs. On August 3d I counted seventy-six small Diptera and some other insects on the upper side of a young leaf of about four inches average diameter, and two hundred on the under side. The insects are caught on all parts of the plant which are exposed, on the stems, on the calyx and corolla, including even the throat of the corolla. Among a lot of others was one plant about three feet high, spreading three feet in diameter, which according to estimate had seven thousand two hundred small flies on it at one time. The hairs are very numerous all over the surface. None of them are sensitive, as I can find. They vary exceedingly in length, from three-sixteenths of an inch to one one-hundredth or even shorter. Some of them have as many as ten cross partitions. The contents of these cells appear quite clear, except one near the top, next to the top cell. This is larger than several of those below, and contains chlorophyll. It seems to be something like a gland. Above this is a larger cell, with perpendicular striæ along its sides. When fresh and undisturbed the top is nearly spherical and resembles a small drop of dew. The secretion is quite copious and exceedingly viscid, with an unpleasant odor. I placed some small fragments of raw beef on the glands one morning, but the sun seemed to dry them up, much as it did those left on blades of grass which had no glands. I placed some very minute portions on the glands in a spot sheltered from the

direct rays of the sun. In some cases the whole of the pieces of beef disappeared. The small insects seem to live but a short time, although they are touched by only two to four hairs. The substance seems soon to be taken out of the insects. In my opinion, it is a true insectivorous plant."

Gardener's Monthly, October. This old and ably edited monthly is always full of matter interesting to all botanists, not only to the horticulturist but the scientific botanist. We can only make mention of one or two notes to be found under the department of "Natural History and Science." An article "On Graft Hybrids" by Thos. Meehan, the Editor, read before the American Association for the Advancement of Science, at Buffalo, goes to prove from actual experiment that hybrids may be obtained by grafting as well as by seeds. An interesting extract is made from a letter written by Mr. J. G. Lemmon, a California botanist upon the age of the Mammoth Trees (*Sequoia gigantea*). In it Mr. Lemmon takes sides with Dr. Gray and combats the popular notion that these trees are several thousand years old.

Field and Forest, October. The 'Flora Columbiana' is brought down to *Liliaceæ*. A pear tree in the grounds of the Department of Agriculture blossomed, September 8th, for the second time, the first set of leaves and fruit having been destroyed by a small fungus in July. A new locality for *Tipularia discolor* has been discovered where an abundance of this rare Orchid can be obtained in flower. It is common in the leafing condition, but the flowers do not appear till long after the leaf has disappeared. The new locality is on the Virginia shore of the Potomac not far above the Three Sisters. The exact time for collecting it in flower is the last week in July.

Proceedings of Davenport Academy of Natural Sciences.—We noticed very briefly in the GAZETTE for November the volume published by the above society. Some papers bearing on Botany seem to us deserving of a fuller mention than was then given. The papers of special interest to botanists are "Obituary Notice of Prof. John Torrey," by Dr. U. C. Parry, "Summer Botanizing in the Wasatch Mountains, Utah Territory," by the same author, and "List of Phenogamous Plants collected in the vicinity of Davenport," by J. G. Haupt and J. J. Nagel. The first paper, read March 28th, 1873 is a beautiful and touching tribute to the memory of the "father of American Botany" by one who had known him well for twenty-eight years.

The second paper, by the same author, is one of special interest and worthy of a separate notice. It is in the form of a letter addressed to Dr. Gray and is a brief sketch of summer botanizing in the Wasatch during the season of 1875. The author wished especially to note the geographical range of the *Conifera* from East to West. He selected as camp a location near the head of Lake Utah, "not far from the high culminating point of the Wasatch range known as Mount Nebo." "One main object of our trip was to determine definitely the important practical question whether the fruiting of *Abies* was strictly biennial, or, in exceptional cases, annual. I had noted, in 1874, the abundant seeding of *Abies* all over this district, extending to the Eastern Rocky Mountains, but now not a single developing cone could be met with in passing through extensive forests of *Abies concolor*, this condition also holding good of other species. The same fact has also been noted by the enterprising collector, J. G. Lemmon in the Sierra Nevada, so that it may be definitely stated, for the benefit of future collectors, that only on *even years* can *Abies* be relied on for a seed crop."

An interesting description is given of the remarkable *Spiraea caespitosa* which is such an interesting plant that I know readers of the GAZETTE will be pleased to read a description of it from so able a writer and so acute an observer as Dr. Parry.

"Among the plants affecting rocky locations, the most eagerly watched and the latest to flower was the remarkable *Spiraea caespitosa*, Nutt. Popularly known under the appropriate common name of "tree moss," it spreads its closely matted foliage over the face of bare rocks, insinuating its taproots, abundantly garnished with terminal fibers, into the narrowest crevices, to which it adheres with a grip almost as tenacious

as the rock itself; only when accidentally it has taken root in a coarse gravelly *debris* can it be successfully removed with its terminal fibrous roots. The main stem, often attaining a thickness of an inch or more, divides horizontally into radiating gnarled branches, which send off from the axils of the primary leaves numerous leafy rosettes by which the growth of the plant is maintained, and from the axis of which the slender bracted flower stems arise. These stems from 3 to 6 inches high are crowned for about one-third their length with a dense cylindrical spike of small white flowers, with exserted style and stamens, set in a light green tomentose calyx. In thrifty specimens these flowering spikes are occasionally branched. The prostrate growing shoots whenever they light upon a suitable crevice strike root and thus help to maintain the growth of the parent plant; where these favorable conditions are wanting, the whole plant, often covering several square feet, can be lifted up, showing on the under surface the remains of dead leaves, in the decaying mould of which moisture is retained to keep up the fresh verdure of the young twigs. It seems to flourish best on the north side of exposed limestone rocks occupying a considerable range of altitude above the lower foothills, choosing by preference the rugged slopes of moderately steep canons. Its flowering period is earliest on the higher elevations, continuing from the latter part of August to the first of October. The peculiar adaptation of this plant for ornamental rock work can be appreciated by those who have once seen it in its native haunts, and it is hoped that from plants and seeds somewhat copiously collected it may eventually find a much larger number of admirers in gardens devoted to this charming class of horticultural adornments."

A STRANGE COLLINSIA.—During the season I received a flower for determination, which at first glance I pronounced to be *Collinsia verna*, Nutt. On closer examination however I found the specimens I had presented two marked variations from the typical plant. The whole were invariably 8-flowered instead of "about six." Then the corolla instead of being only "twice the length of the calyx" was in every instance fully three times its length. On searching the locality in which they had been found, I discovered that an area of about one-half an acre was thickly covered with the plant, and that fully a third of the specimens presented these variations. Heretofore all my observations of *Collinsia* have led me to believe it to be a constant species. The locality in which these irregular *Collinsias* occur was a moist ridge slightly above the level of the surrounding swamp. The soil, the rich black loam characteristic of our Indiana prairies. I regret exceedingly that having no facilities for preserving them I secured no specimens.

M. S. C.

In the italicised characteristics of *Rudbeckia hirta*, L., I find, upper leaves *sissile*. I have specimens in which the upper leaves are distinctly petioled. The petiole broad-margined. It may be possible that the specimens are in an imperfect state, although it seems to me, every other characteristic being perfect, that there can be no doubt that this is a variation from the typical plant. I noted it only on account of its differing from the description in Gray's Manual, and because I deemed these slight departures from the typical form of interest to botanists.

M. S. C.

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